

THE INCINERATOR WORK GROUP'S  
PRELIMINARY DRAFT  
REGULATORY ALTERNATIVES PAPER (RAP)

*Presented as a status report to:*

ICCR Coordinating Committee  
Fort Collins, CO

*April 28, 1998*

# MEMORANDUM

**To:** ICCR Coordinating Committee  
**From:** Incinerator Work Group  
**Subject:** **STATUS REPORT -- PRELIMINARY DRAFT REGULATORY  
ALTERNATIVES PAPER**  
**Date:** April 17, 1998

*This early draft version of the Regulatory Alternatives Paper (RAP) is being provided to the Coordinating Committee (CC) as a status report and for informational purposes only. While any comments from the CC would be welcome at this time, a more complete draft will be submitted to the Coordinating Committee for review during its July 28-29 meeting, at which time the Incinerator Work Group (IWG) will formally request comments. Most sections of this early draft RAP have received preliminary review by the full IWG. However, because we consider this document work in progress, the IWG has not yet attempted to reach consensus on specific sections, and work group member consensus on the contents of this document should not be inferred.*

## INTRODUCTION

The Incinerator Work Group (IWG) of the Industrial Combustion Coordinated Rulemaking (ICCR) has prepared this draft Regulatory Alternatives Paper (RAP) for review by the ICCR Coordinating Committee (CC). The IWG recommends that the CC adopt this RAP as Committee recommendations to EPA for consideration in preparing a description of regulatory options, which the Agency must submit to litigants as an options paper pursuant to a consent decree involving industrial and commercial waste incinerators. EPA's options paper is due on November 16, 1998.

The RAP is an intermediate product in the regulatory development process. It contains recommendations regarding *non-hazardous solid waste incineration categories* considered for regulation under section 129 of the *Clean Air Act*, the pollutants to be regulated, and potential control alternatives (including pollution prevention) for each incinerator subcategory. Additionally, the RAP contains other relevant subcategory-specific information, such as subcategory population statistics, combustion device descriptions, the status of data collection and analysis, and issues and needs. The information and recommendations presented in the RAP will continue to be revised and updated throughout the regulatory development process as new information is received.

The ICCR CC is chartered under the Federal Advisory Committee Act (FACA). As such, the work of the Coordinating Committee and the ICCR's seven work groups is conducted by *stakeholders* representing industries, environmental groups, State and local agencies, and other interested parties. The ICCR's five source work groups address incinerators, boilers, process heaters, stationary gas turbines, and internal combustion engines. The source work groups are supported by two additional work groups addressing testing/monitoring and economics. The IWG has taken the lead in preparing the RAP.

This memorandum is organized into sections on background, applicability, subcategory characterizations and regulatory alternatives, statutes and executive orders, and issues and needs. Additionally, draft applicability language and definition sheets on each emission source subcategory are attached. The definition sheets will evolve continuously throughout the standards development process.

## BACKGROUND

The mission of the IWG is to develop recommendations for consideration by the CC in developing recommendations to EPA regarding the development of non-hazardous solid waste incineration regulations under section 129 of the *Clean Air Act*. Because section 129 defines boilers and process heaters that combust non-hazardous solid waste as incineration devices, subcategories from the Boiler Work Group (BWG) and Process Heater Work Group (PHWG) are expected to be added to this draft paper. However, the number and description of PHWG and BWG subcategories to be added is uncertain at this time because the Agency has not adopted a definition of nonhazardous solid waste for use in regulations developed under section 129. This definition of nonhazardous solid waste is crucial to determining whether certain units falling under the BWG and PHWG will be considered nonhazardous solid waste incineration units (i.e., subject to section 129) or boilers and process heaters (i.e., subject to section 112). The definition of nonhazardous solid waste will probably not be as crucial to the IWG group because all incinerators may be classified under section 129 regardless of the nonhazardous solid waste materials combusted.

The IWG has identified the following five non-hazardous solid waste incineration subcategories for possible regulation under section 129:

- # Chemical, petroleum, and pharmaceutical waste incinerators
- # Wood and wood waste incinerators
- # Pathological waste incinerators and crematories
- # Drum reclaimer units
- # Parts reclaimer units

At this time the IWG envisions recommending a separate set of regulatory requirements (e.g., emission limits) for each subcategory. However, in the future, further subdividing or combining of these subcategories may occur. Additionally, it may be necessary to create a *miscellaneous* or *other* category to ensure that any units not covered by the above subcategories are addressed.

The IWG expects to recommend that the regulatory requirements for the above subcategories (as well as any BWG and PHWG subcategories) be addressed in a single rulemaking package (i.e., a single preamble and regulation for proposal, and the same for promulgation), and the rulemaking category would probably be defined as something similar to *Standards of Performance for Non-Hazardous Waste Combustors*. Because section 129 distinguished between industrial and commercial waste incinerators (ICWI) and other solid waste incinerator (OSWI), the IWG believes that the rulemaking would also need to distinguish between these two categories of combustion units or explicitly consider and reject this approach with a

rational and logical explanation for why it is more reasonable to combine these two categories into one category (e.g., if the same emission limits were recommended for both categories, this could serve as the basis for combining both categories into one category). Although the November 16 consent decree only requires EPA to discuss regulatory alternatives for ICWI sources, the IWG has decided to include OSWI in this RAP due to the similarity of sources and because we hope to develop recommended regulations for these sources simultaneously with recommended regulations for IWCI (e.g., in a single rulemaking package).

Much of the IWG's past work has been devoted to analyzing data contained in the following three databases:

- # **Inventory database** -- *a detailed listing of industrial and commercial combustion units used by all five ICCR source work groups and derived from existing state and federal databases.*
- # **Information collection request (ICR)/survey database** -- *responses from a recent survey providing updated and detailed information for facilities identified in the inventory database as combusting non-hazardous solid waste.*
- # **Emissions database** -- *emissions data from state agencies representing source testing of a variety of combustion units.*

The ICCR inventory database contains 8,091 facilities believed to have one or more incineration units. However, the responses to the ICR indicate that many of these units have been shut down or otherwise do not exist. Other units were eliminated from consideration because they were determined to be burning hospital and infectious medical waste, municipal waste, or other types of materials outside the scope of the ICCR. The status of about 1,900 units remains unknown because either insufficient information was available to permit contacting the facilities or the facilities did not respond to the ICR. Taking all of these factors into consideration, our best estimate of the number of incineration units in the inventory and ICR databases that are currently in operation and being addressed by the IWG is about 1,600. However, this estimate could increase or decrease by several hundred units as more information becomes available (e.g., the results of a follow-up mailing to facilities not responding to the first mailing). Additionally, the number of incineration units may increase as boilers and process heaters are reclassified based on EPA's ultimate adoption of a definition of non-hazardous solid waste.

The extent to which the inventory and ICR databases capture all operating incinerators in the U.S. is unknown. However, based on the individual subcategory population estimates presented in the appendix, we estimate that the inventory and ICR databases represent roughly [number]% of all incineration units currently operating in the U.S. (excluding those units that would not be covered by this section 129 rulemaking). Although not all operating units are captured, we believe that the databases are representative of the cross-section of U.S. incinerators and provide a sufficient basis for rulemaking.

## **APPLICABILITY**

The IWG's recommendations apply to all incinerators (including boilers and process heaters that combust nonhazardous solid waste) that are not exempt from section 129 or specifically exempted from the rulemaking (e.g., incinerators addressed by other rulemakings). Section 129(g)(1) exempts wastes required to have a permit under section 3005 of the Solid Waste Disposal Act (i.e., hazardous wastes), material recovery facilities which combust waste for the primary purpose of recovering metals, qualifying small power production and co-generation facilities, and air curtain incinerators combusting only yard and wood wastes and clean lumber. Additionally, municipal waste combustors and hospital and medical infectious waste incinerators would be exempt from this rulemaking where they are addressed in other rulemakings. Recommendations for draft applicability language and definitions, in regulatory format, are presented in Attachment A.

## **SUBCATEGORY CHARACTERIZATIONS AND REGULATORY ALTERNATIVES**

Recommendations for preliminary subcategory definitions and regulatory alternatives are presented for each subcategory in Attachment B and are summarized in Table 1. Additionally, recommendations are presented on pollutants considered for regulation (initially the nine pollutants listed in section 129), whether the subcategory falls under ICWI or OSWI, any groupings within the subcategory, population statistics, material combusted, combustion device description, the basis for subcategory bounds, the floor level of control, the status of data collection and analysis, issues and needs, and other comments.

Based on the preliminary information available to the IWG, it appears that most existing units have minimal or no controls in place. Additionally, only very limited test data on most pollutants of interest are available, and the IWG plans to recommend a test program to address these testing needs. Several subcategories are small in terms of the number of operating units, and these may be candidates for merging into larger subcategories.

## **STATUTES AND EXECUTIVE ORDERS**

In addition to the substantive requirements imposed by the Clean Air Act when promulgating regulations, the Agency must comply with a number of administrative responsibilities prior to adopting regulations. Some of these obligations flow from statutes and others from executive orders (EOs) signed by the President as directives to the Executive Branch.

EPA must comply with administrative requirements in following five statutes at the proposal stage of a regulation's development.<sup>1</sup>

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<sup>1</sup>One additional statutory administrative requirement is triggered when the Agency promulgates *final* regulations. Under the Congressional Review Act, EPA generally must submit all rules of general applicability to Congress and the Comptroller General before the rule may take effect.

- # Section 307(d) of the *Clean Air Act* requires that regulations under section 129 be supported by a rulemaking docket and allow for both written and oral comment upon the proposed rule.
- # Under the *Paperwork Reduction Act*, EPA must obtain a control number from the Office of Management and Budget (OMB) if the regulation contains any information collection request (reporting obligations under an applicable emission standard, for instance) calling for answers to identical questions posed to ten or more persons.
- # The *National Technology Transfer and Advancement Act (NTTAA)* mandates that EPA must use existing suitable voluntary consensus standards (e.g., test methods) unless their use would be inconsistent with applicable law or otherwise impractical in EPA's judgement.
- # If the proposed regulation will contain a federal mandate forcing State, local, and tribal governments, in the aggregate, or the private sector to spend in excess of \$100 million in any given year, the *Unfunded Mandates Reform Act (UMRA)* requires EPA to prepare a statement identifying a number of economic and environmental costs and benefits associated with the proposed rule, both locally and nationally. UMRA also requires that, for proposed rules which require an UMRA statement, EPA must identify and consider a reasonable number of regulatory alternatives and select the least costly, most cost-effective, or least burdensome option that is consistent with the agency's statutory duties, unless EPA explains its choice not to select one of the foregoing options. UMRA lastly contains two consultation requirements: EPA must consult with elected officers of State, local, and tribal governments with regard to proposed rules that contain significant Federal intergovernmental mandates and it must develop a small government agency plan (which provides for notice to, input from, and education for, small governments regarding a proposed rule) for any rule that might significantly or uniquely affect small governments.
- # The *Regulatory Flexibility Act (RFA)*, as amended by the Small Business Regulatory Enforcement Fairness Act, requires EPA to prepare an initial regulatory flexibility analysis (IRFA), convene a small business advocacy review panel, and include the IRFA or a summary of it in the proposal's preamble, unless the Administrator can certify that a proposed regulation will not have a significant economic impact on a substantial number of small entities.

In addition to its statutory obligations, EPA has the following three EOs to consider.

- # Under *EO 12875*, EPA must develop an effective process for elected officials and other representatives of State, local, and tribal governments to provide meaningful input on regulatory proposals. Also, EPA may not (unless required by law) promulgate a regulation that creates an unfunded mandate upon State, local, or

tribal governments without either providing funds necessary to pay the direct costs of compliance or consulting with representatives of affected governments prior to promulgation. (This is the same requirement that Congress subsequently enacted in UMRA.)

- # Prior to proposal, *EO 12866* requires that EPA seek involvement of parties affected by a proposed rule and suggests that at least a 60 day comment period on proposed rules be offered. The same EO also requires that EPA submit to OMB any proposed or final *significant* regulatory action for interagency review.<sup>2</sup>
- # *E.O. 12898* specifies that EPA must make achieving environmental justice part of its mission by identifying and addressing, as appropriate, practicable, and permitted by law, disproportionately high and adverse human health or environmental effects of its rulemaking actions on minority and low-income populations.<sup>3</sup>

The ICCR has, to date, laid the groundwork for developing recommendations aiding EPA's compliance with these obligations. Specifically, work groups currently are discussing recommendations for *model plants*, which will reflect the design of typical facilities in the affected industry and could be used when EPA seeks to conduct the economic and environmental analyses necessary to comply with UMRA, RFA, and EO 12866. The Agency could consider the effect of proposed regulations upon these model plants as illustrative of the impact the proposals may have nationally. In addition, ICCR work groups, in the course of recommending hazardous air pollutants (HAPs) for testing and regulation under section 112, also have identified existing test methods for measuring HAPs, and recommendations that these existing test methods be considered for determining compliance with regulations could be useful to the Agency's compliance with the NTTAA's requirement to search for applicable voluntary consensus standards. Next, section 129(a)(3) directs that standards for new sources incorporate "siting requirements that minimize, on a site specific basis, to the maximum extent practicable, potential risks to public health and the environment." Siting requirements may trigger environmental justice concerns, and the IWG expects to consider the Agency's Environmental Justice Implementation Plan to develop recommendations for consideration by the CC for developing recommendations

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<sup>2</sup>*Significant* is defined as an action: having an annual effect on the economy of \$100 million or more; adversely affecting in any material way the economy, a sector of the economy, jobs, the environment, public health or safety, or affected governments or communities; creating a serious inconsistency or interfering with an action taken or planned by another agency; materially altering the budgetary impact of entitlements, grants, etc., or the rights/obligations of recipients; or raising novel legal or policy issues.

<sup>3</sup>If a rule is *significant* under *E.O. 12866* and it involves an environmental health or safety risk that EPA has reason to believe may disproportionately affect children, *EO 13045* requires EPA to evaluate the environmental health or safety effects of the planned regulation on children and explain why the proposal is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency. Since the standards to be developed under section 129 are technology-based and not health- or risk- based, *EO 13045* does not apply.

to EPA that address such concerns. Finally, EPA will, of course, be complying with the other relevant statutes and EOs in a timely manner, and recommendations from the ICCR CC will be considered, as appropriate, by EPA in such compliance.

**ISSUES AND NEEDS** -- to be completed



TABLE 1. SUMMARY OF SUBCATEGORY DEFINITIONS

SUB-CATEGORY NAME	GROUPING WITHIN SUB-CATEGORY	MATERIAL COMBUSTED	ICWI or OSWI	EST. NO. OF UNITS		POLLUTANTS CONSIDERED FOR REGULATION	FLOOR LEVEL (CONTRC
				IN DATA-BASE	NATION-WIDE		
<u>Chemical, Petroleum, and Pharmaceutical Solid Waste Incinerators</u>	None identified at this time	By-products of industrial operations (including combinations with less than 30% trash or less than 10% medical waste), environmental control device sludges, industrial process bio-solids, waste by-products, maintenance residues, off-test and out-dated materials, and packaging materials	ICWI	Approx. 100		Section 129 pollutants	
<u>Wood and wood wastes</u>	Milled Solid and Engineered Wood Wastes	Wastes and residues resulting from wood-working manufacturing activities, containing 2 to 15 percent by weight adhesives, glues, and binders in engineered woods, and containing no more than 5 percent by weight of contaminants such as cardboard, paper, paints, and solvents.	OSWI	17		Section 129 pollutants	

SUB-CATEGORY NAME	GROUPING WITHIN SUB-CATEGORY	MATERIAL COMBUSTED	ICWI or OSWI	EST. NO. OF UNITS		POLLUTANTS CONSIDERED FOR REGULATION	FLOOR LEVEL (CONTRC)
				IN DATA-BASE	NATION-WIDE		
“	Harvested Wood and Agricultural Wastes	Wastes and residues resulting from land clearing, orchard, silviculture, nursery, greenhouse, agricultural, and forest management activities and sawmill operations and containing no more than 5 percent by volume of contaminants such as sand, dirt, cardboard, and paper	OSWI	8		Section 129 pollutants	
“	Construction, Demolition, and Treated Wood Wastes	Wastes and residues resulting from: (1) the construction, remodeling, repairing, and demolition of individual residences, commercial buildings, and other structures, and (2) the treatment of wood products that are impregnated or otherwise treated with various preservatives for the purpose of protecting or otherwise extending the structural properties of the wood	OSWI	9		Section 129 pollutants	

SUB-CATEGORY NAME	GROUPING WITHIN SUB-CATEGORY	MATERIAL COMBUSTED	ICWI or OSWI	EST. NO. OF UNITS		POLLUTANTS CONSIDERED FOR REGULATION	FLOOR LEVEL (CONTRC)
				IN DATA-BASE	NATION-WIDE		
<u>Pathological Waste and Crematory Incinerators</u>	<100 lb/hr (primarily poultry farmers; also small animal crematories, veterinary centers, humane societies, and pharmaceutical companies)	Human or animal remains, anatomical parts and/or tissue, the bags/containers used to collect and transport the waste material, and animal bedding (if applicable)	OSWI		8,000	Section 129 pollutants	Good combustic practices
“	100 to 500 lb/hr (primarily human crematories; also animal crematories, veterinary clinics, humane societies, and pharmaceutical companies)	“	OSWI		2,000	Section 129 pollutants	Good combustic practices

SUB-CATEGORY NAME	GROUPING WITHIN SUB-CATEGORY	MATERIAL COMBUSTED	ICWI or OSWI	EST. NO. OF UNITS		POLLUTANTS CONSIDERED FOR REGULATION	FLOOR LEVEL (CONTRC)
				IN DATA-BASE	NATION-WIDE		
“	>500 lb/hr (primarily animal disposal systems for hospitals, animal control facilities, and research facilities)	“	OSWI		100	Section 129 pollutants	Good combustic practices
<u>Drum Reclaimer Incinerators</u>	None	An incinerator used to reclaim steel containers (e.g., 55 gallon drums) for reuse or to prepare them for recycling by burning or pyrolyzing interior and exterior container coatings and residues prior to cleaning by abrasive shot blasting (containers must be empty as defined by RCRA prior to processing)	ICWI	43	50	To include Section 129 list	High-T afterburne GCP, and afterburne pre-heat

SUB-CATEGORY NAME	GROUPING WITHIN SUB-CATEGORY	MATERIAL COMBUSTED	ICWI or OSWI	EST. NO. OF UNITS		POLLUTANTS CONSIDERED FOR REGULATION	FLOOR LEVEL (CONTRC
				IN DATA-BASE	NATION-WIDE		
<u>Parts Reclaimer Incinerators</u>	None	An Incinerator used to reclaim metal parts such as paint hooks and racks, electric motor armatures, transformer winding cores, and electro-plating racks for use in their current form by burning off cured paint, plastisol (i.e., polyvinyl chloride and phthalate plasticizer), varnish, or unwanted parts such as plastic spacers or rubber grommets	ICWI	299		Section 129 pollutants	High-T afterburne GCP, and afterburne pre-heat

**ATTACHMENT A**

**DRAFT APPLICABILITY LANGUAGE AND DEFINITIONS  
IN REGULATORY FORMAT**

**Subpart [?] -- Standards of Performance for Solid Waste Combustion Units for Which Construction is Commenced After [date]**

**Section [?] Am I subject to this regulation?**

(a) Except as provided in paragraph (b) of this section, the affected facility to which this subpart applies is each individual Solid Waste Incineration Unit for which construction or reconstruction is commenced after [date] or for which modification is commenced after [date].

(b) The following facilities are not subject to this subpart:

(1) Any incinerator or other unit required to have a permit under section 3005 of the Solid Waste Disposal Act.

(2) Any materials recovery facility (including primary or secondary smelters) which combusts waste for the primary purpose of recovering metals.

(3) Any qualifying small power production facility, as defined in section 3(17)(C) of the Federal Power Act (16 U.S.C. 769(17)(C)), or qualifying cogeneration facilities, as defined in section 3(18)(B) of the Federal Power Act (16 U.S.C. 796(18)(B)), which burn homogeneous waste (such as units which burn tires or used oil, but not including refuse-derived fuel) for the production of electric energy or, in the case of qualifying cogeneration facilities, which burn homogeneous waste for the production of electric energy and steam or forms of useful energy (such as heat) which are used for industrial, commercial, heating, or cooling purposes.

(4) Any air curtain incinerator that burns only wood wastes, yard wastes, and clean lumber and that complies with the opacity limitations in subpart [?].

(5) Any incinerator or other unit which meets the applicability requirements under subpart Cb, Ce, Ea, Eb, or Ec of this part (i.e., standards or guidelines for certain municipal waste and hospital and medical infectious waste incinerators).

**Sec. [?] How are the terms used in this subpart defined?**

Air Curtain Incinerator an Incinerator that operates by forcefully projecting a curtain of air across an open chamber or pit in which burning occurs; Incinerators of this type can be constructed above or below ground and with or without refractory walls and floor.

Boiler means an enclosed device using controlled flame combustion and having the primary purpose of recovering and exporting thermal energy in the form of steam or hot water.

Chemical, Petroleum, and Pharmaceutical Solid Waste Incinerator means an Incinerator combusting Solid Waste comprised, in aggregate, of more than [number] percent by weight, as

measured on an annual basis, of byproducts of industrial operations (including combinations with less than 30% trash or less than 10% medical waste), environmental control device sludges, industrial process biosolids, waste byproducts, maintenance residues, off-test and out-dated materials, and packaging materials.

Commercial and Industrial Solid Waste Incineration Units means the following types of Solid Waste Incineration Units: Chemical, Petroleum, and Pharmaceutical Solid Waste Incinerators; Drum Reclaimer Incinerators; Parts Reclaimer Incinerators; and [any other subcategories of boilers and process heaters].

Construction, Demolition, and Treated Wood Waste Incinerator means an Incinerator combusting Solid Waste comprised, in aggregate, of more than [number] percent by weight, as measured on a [time period] basis, of wastes and residues resulting from: (1) the construction, remodeling, repairing, and demolition of individual residences, commercial buildings, and other structures, including pallets; forming and framing lumber; treated lumber; shingles; tar-based products; plastics; plaster; wallboard; insulation material; broken glass; painted or contaminated lumber; chemically treated lumber; white goods; reinforcing steel; and plumbing, heating, and electrical parts; and (2) the treatment of wood products that are impregnated or otherwise treated with various preservatives (e.g., creosote, copper compounds, arsenic compounds, pentachlorophenol, [to be added]) for the purpose of protecting or otherwise extending the structural properties of the wood.

Drum Reclaimer Incinerator means an incinerator used to reclaim steel containers (e.g., 55 gallon drums) for reuse or to prepare them for recycling by burning or pyrolyzing interior and exterior container coatings and residues prior to cleaning by abrasive shot blasting. (Containers must be empty as defined by RCRA prior to processing.)

Harvested Wood and Agricultural Waste Incinerator means an Incinerator combusting Solid Waste comprised, in aggregate, of more than [number] percent by weight, as measured on a [time period] basis, of wastes and residues resulting from land clearing, orchard, silviculture, nursery, greenhouse, agricultural, and forest management activities and sawmill operations and containing no more than 5 percent by volume of contaminants such as sand, dirt, cardboard, and paper.

Incinerator means a device that combusts Solid Waste for the primary purpose of reducing the volume of waste and does not incorporate heat recovery as part of its integral design.

Milled Solid and Engineered Wood Waste Incinerator means an Incinerator combusting Solid Waste comprised, in aggregate, of more than [number] percent by weight, as measured on a [time period] basis, of wastes and residues resulting from woodworking manufacturing activities, containing 2 to 15 percent by weight adhesives, glues, and binders in engineered woods, and containing no more than 5 percent by weight of contaminants such as cardboard, paper, paints, and solvents.



Other Solid Waste Incineration Units means the following types of Solid Waste Incineration Units: Construction, Demolition, and Treated Wood Waste Incinerators; Harvested Wood and Agricultural Waste Incinerators; Milled Solid and Engineered Wood Waste Incinerator; Pathological Waste and Crematory Incinerators; and [any other subcategories of boilers and process heaters].

Parts Reclaimer Incinerator means an Incinerator used to reclaim metal parts such as paint hooks and racks, electric motor armatures, transformer winding cores, and electroplating racks for use in their current form by burning off cured paint, plastisol (i.e., polyvinyl chloride and phthalate plasticizer), varnish, or unwanted parts such as plastic spacers or rubber grommets.

Pathological Waste and Crematory Incinerator means an Incinerator combusting Solid Waste comprised, in aggregate, of more than 90 percent by weight, as measured on a daily basis (and more than 70 percent on an individual batch basis) of only human or animal remains, anatomical parts and/or tissue, the bags/containers used to collect and transport the waste material, and animal bedding (if applicable).

Process Heater means an enclosed device using a controlled flame and having the primary purpose of transferring heat to an industrial or commercial process.

Solid Waste means ... [recommended definition under discussion at EPA].

Solid Waste Incineration Unit means a distinct operating unit of any facility which combusts any Solid Waste material from commercial or industrial establishments or the general public.

Note: Other definitions will be included as solid waste boilers and process heaters are determined to be covered by this rulemaking.

**ATTACHMENT B**

**DRAFT SUBCATEGORY DEFINITION SHEETS**

**SUBCATEGORY NAME:** Chemical, petroleum, and pharmaceutical solids, liquids, and sludges

**ASSIGNED CAA SECTION (ICWI OR OSWI):** Section 129 (ICWI)

**GROUPINGS WITHIN SUBCATEGORY:** None identified at this time.

**POPULATION STATISTICS:** Approximately 100 combustors identified in the EPA databases.

**MATERIAL COMBUSTED:** Byproducts of industrial operations, including combinations with less than 30% trash or less than 10% medical waste, environmental control device sludges, industrial process biosolids, waste byproducts, maintenance residues, off-test and out-dated materials, and packaging materials.

**COMBUSTION DEVICE:** All types of incinerators are used, including single and multichamber, fluid bed, rotary kilns, multiple hearth, and tray types. Air pollution control devices are generally add on units whose type and efficiency are driven by state regulations and permit conditions.

**BASIS FOR SUBCATEGORY BOUNDS:** This subcategory includes solids, liquid, and sludge incinerators mostly within SIC code 28, but includes incinerators burning similar materials at all types of facilities.

**POLLUTANTS CONSIDERED FOR REGULATION:** Particulate matter (total and fine), opacity (as appropriate), SO<sub>2</sub>, HCl, NO<sub>x</sub>, CO, Pb, Cd, Hg, and dioxins and furans.

**FLOOR LEVEL OF CONTROL:** To be completed

**REGULATORY ALTERNATIVES ABOVE FLOOR:** To be completed

**STATUS OF DATA COLLECTION AND ANALYSIS:** Have identified initial source list; gathering emission and control data.

**ISSUES AND NEEDS:** To be completed

**OTHER COMMENTS:**

Based on the information available:

Does the material being combusted lead to different HAP emissions - no information.  
Does the design of the equipment used lead to different HAP emissions - no information.  
There currently is no basis for subdividing this subcategory further. Once ICR data on wastes combusted are considered, there may be justification for further subdividing.

**SUBCATEGORY NAME:** Wood and Wood Wastes

**ASSIGNED CAA SECTION (ICWI OR OSWI):** Section 129 (OSWI)

**GROUPINGS WITHIN SUBCATEGORY:**

Milled Solid and Engineered Wood Wastes  
Harvested Wood and Agricultural Wastes  
Construction, Demolition, and Treated Wood Wastes

**POPULATION STATISTICS:**

Milled solid and engineered wood incinerators --*17 units in databases*  
Harvested wood and agricultural incinerators --*8 units in databases*  
Construction, demolition, and treated incinerators --*9 units in databases*

**MATERIALS COMBUSTED:**

Milled Solid and Engineered Wood Wastes Wastes and residues resulting from woodworking manufacturing activities. The specific characteristics of these materials vary depending on the specie of wood (e.g., pine, oak, and poplar) and the engineered wood ( e.g. particleboard, plywood, and fiberboard ) used. The proportion of adhesives, glues, and binders normally found in engineered wood ranges from 2 to 15 percent by weight depending on the product. The composition is variable and contains no more than 5 percent by weight of other contaminants such as cardboard, paper, paints, and solvents.

Harvested Wood and Agricultural Wastes Wastes and residues resulting from land clearing, orchard, silviculture, nursery, greenhouse, agricultural, and forest management activities and sawmill operations. The specific characteristics of these materials vary. The moisture content is variable. The composition contains no more than 5 percent by volume of contaminants such as sand, dirt, cardboard, and paper.

Construction, Demolition, and Treated Wood Wastes *Construction wastes* are wastes and residues resulting from the construction, remodeling, and repairing of individual residences, commercial buildings, and other structures. The composition is variable and generally includes pallets, forming and framing lumber, treated lumber, shingles, tar-based products, plastics, plaster, wallboard, insulation material, plumbing, heating, and electrical parts. *Demolition wastes* are generally the same as construction wastes but may include broken glass, painted or contaminated lumber, chemically treated lumber, white goods, and reinforcing steel. *Treated wood wastes* are wastes and residues resulting from the treatment of wood products that are impregnated or otherwise treated with various preservatives (e.g., creosote, copper compounds, arsenic compounds, pentachlorophenol, [to be added]) for the purpose of protecting or otherwise extending the structural properties of the wood. The composition is variable and contains such contaminants as organic and inorganic chemicals, metals, oils, paint, solvents, and pigments.

**COMBUSTION DEVICE:** Includes single and multi-chamber and fluidized bed incinerators of various sizes.

**BASIS FOR SUBCATEGORY BOUNDS:** To be completed

**POLLUTANTS CONSIDERED FOR REGULATION:** Section 129 Pollutants

**FLOOR LEVEL OF CONTROL:** To be completed

**REGULATORY ALTERNATIVES ABOVE FLOOR:** To be completed

**STATUS OF DATA COLLECTION AND ANALYSIS:**

The database indicates 6 units to have test data. The EPA has been requested to obtain these test reports.

The database indicated 11 units to have some kind of control. Independent verification by the Subteam identified no unit as having controls. Two units were identified by the Subteam as being teepee burners and 2 units were identified as air curtains.

The database identified 18 facilities as belonging to, or associated with, various agricultural activities. Independent verification by the Subteam identified no facility as being an agricultural facility. 6 facilities no longer had incineration units, 5 facilities were combusting MWC, and 3 facilities were combusting pathological or animal remains, 1 facility was combusting chemical off-gas, 1 facility was a boiler, 1 facility was a process heater, and 1 facility could not be contacted by the subteam.

**ISSUES AND NEEDS:** To be completed

**OTHER COMMENTS:** The subteam does not know if the applicability of an agricultural subcategory is valid. Although independent verification of the 18 facilities listed as agricultural facilities in the database indicates no such facility or unit exists, the subteam is reserving the right to continue to carry this category until a more definitive determination is made.

**SUBCATEGORY NAME:** Pathological Waste and Crematory Incinerators

**ASSIGNED CAA SECTION (ICWI OR OSWI):** Section 129 (OSWI)

**GROUPINGS WITHIN SUBCATEGORY:**

By mass burn rates as follows: less than 100 lb/hr; 100 to 500 lb/hr; over 500 lb/hr. Profiles for each of these groups is given below.

By the amount and composition of material burned that is not animal or human remains.

**PROFILES BY BURN RATE GROUPING**

Less than 100 lb/hr mass burn rate

**Typical user profile-** Primarily poultry farmers; secondarily small animal crematories, veterinary centers, humane societies, and pharmaceutical companies. Little or no training on operating parameters by a qualified source.

**Annual operating hours per unit-** unknown

**Typical waste profile-** Primarily poultry carcasses; secondarily small animal remains, the bags/containers used to collect and transport the waste material, and animal bedding.

**Typical design profile-** For poultry units: single chamber systems; fueled with #2 fuel oil, LP gas, or natural gas; no air or temperature controls; manual operating system; batch fed; no add-on emission controls.

100 to 500 lb/hr mass burn rate

**Typical user profile-** Primarily human crematories; secondarily: animal crematories; veterinary clinics; humane societies; and pharmaceutical companies. Training often required. Training usually conducted by manufacturers or service organizations.

**Annual operating hours per unit-** 700

**Typical waste profile-** Primarily human remains and associated containers; secondarily: animal remains, the bags/containers used to collect and transport the waste material, and animal bedding.

**Typical design profile-** Multiple chamber systems; fueled with natural gas, LP gas, or #2 fuel oil; limited air controls; limited temperature controls; manual control system; batch fed; no add-on emissions control devices.

Greater than 500 lb/hr mass burn rate

**Typical user profile-** Primarily animal disposal systems for hospitals, animal control facilities, and research facilities.

**Annual operating hours per unit-** 1000

**Typical waste profile-** Primarily animal remains, the bags/containers used to contain them, and animal bedding.

**Typical design profile-** Multiple chamber systems; fueled with natural gas, LP gas, or #2 fuel oil; air and temperature controls; automatic control systems; mechanical feed with intermittent charging; no add-on emissions control devices.

**POPULATION STATISTICS:**

Approximately 10,100 units total.

Population by size groupings:	less than 100 lb/hr-	8000 units
	100 to 500 lb/hr-	2000 units
	over 500 lb/hr-	100 units

**MATERIALS COMBUSTED:** Pathological waste is waste material consisting of only human or animal remains, anatomical parts and/or tissue, the bags/containers used to collect and transport the waste material, and animal bedding (if applicable)(*from the HMIWI MACT*)

**COMBUSTION DEVICES:**

These combustors are generally single or multiple chamber (in-line or retort design). They are fueled with fossil fuel and operate with excess air. The wastes, consisting of at least 90% by mass pathological waste as defined above, are fed as single batches or intermittently fed. Typically these combustors have no add-on emission control devices.

The 90% limit is on a daily basis. However, at no time shall any batch consist of less than 70% pathological material.

A crematory incinerator is a pathological waste incinerator which is primarily used to reduce single batches of human or animal remains and their containers (pathological waste) to their basic elements with the intent of recovering the cremated remains for memorialization purposes.

**BASIS FOR SUBCATEGORY BOUNDS:** As regulation development proceeds, it may be beneficial to make subdivisions based on size, waste mix, or other criteria.

**POLLUTANTS CONSIDERED FOR REGULATION:** Section 129 pollutants

**FLOOR LEVEL OF CONTROL (EXISTING):** Good combustion practice.

**REGULATORY ALTERNATIVES ABOVE FLOOR (EXISTING):** To be determined.

**BEST CONTROLLED SIMILAR SOURCE (FLOOR-NEW):** To be determined.

**REGULATORY ALTERNATIVES ABOVE FLOOR (NEW):** To be determined.

**STATUS OF DATA COLLECTION AND ANALYSIS:**

Have obtained numerous emission test reports on criteria pollutants and have requested additional test information from EPA for 129 pollutants. However, the data are incomplete and do not represent the scenarios we wish to evaluate.

Will have EPA request information from the ICR respondents indicating they have information on the use of add-on emissions control devices.

**ISSUES/NEEDS/COMMENTS:** The majority of the units in the *less than 100 lb/hr* grouping are not represented in the databases.

**OTHER COMMENTS:** To be completed.



**SUBCATEGORY NAME:** Drum Reclaimers

**ASSIGNED CAA SECTION (ICWI OR OSWI):** Section 129 (ICWI)

**GROUPINGS WITHIN SUBCATEGORY:** None

**POPULATION STATISTICS:**

ICCR Inventory Database - 37 facilities, 43 units

EPA 1990 112(c)(6) Emissions Inventory - 12 facilities, 4.6 million 55-gal drums burned per year

Trade group estimate - 50 units, 12 million 55-gal drums burned per year

**MATERIALS COMBUSTED:** This type of incinerator is used to reclaim steel containers, most often 55-gallon drums, for reuse or to prepare them for recycling. Drums are prepared for cleaning by abrasive shot blasting by being processed through the furnace, where interior and exterior coatings and residues are burned or pyrolyzed. Containers must be empty as defined by RCRA prior to furnace processing. Natural gas is often fired as the primary fuel in drum furnaces.

**COMBUSTION DEVICE:** The typical drum reclaimer unit is a semi-continuous tunnel furnace equipped with a high temperature afterburner. Heat inputs listed in the ICCR inventory database range from 1.2 MMBtu/hr to 15.6 MMBtu/hr.

**BASIS FOR SUBCATEGORY BOUNDS:** Due to the easy identification and substantial number of these units in the ICCR inventory database, their unique purpose, and the potential for emissions of section 129 pollutants, they were subcategorized for further study. Drum reclaimer incinerators are distinct from parts reclaimer incinerators because the drum reclaimer incinerators tend to be larger, with greater heat input, are semi-continuous rather than batch, and hazardous constituents potentially present in the drums may result in emissions different from those of parts reclaimers.

**POLLUTANTS CONSIDERED FOR REGULATION:** These include the complete set of section 129 pollutants: PM, SO<sub>2</sub>, CO, NO<sub>x</sub>, Pb, and HCl, dioxins, Hg, and Cd. PM (RM5) emissions are likely to be fairly well-characterized, and there exist a number of State regulations on PM emissions from these units. However, queries of the SURVEYV2.MDB database indicate that no HAPs data are available. The 112(c)(6) Emissions Inventory lists a 2,3,7,8-TCDD TEQ emission factor of 1.09E-07 lbs per 1000 drums burned.

**FLOOR LEVEL OF CONTROL:** This is likely to be a high-temperature afterburner along with good combustion practices such as ensuring that the drums are empty of all materials that can be reasonably removed by techniques other than combustion, and afterburner preheat prior to introducing drums into the furnace. Numerical emission standards for all section 129 pollutants are required.

**REGULATORY ALTERNATIVES ABOVE FLOOR:** Since the floor control does not control acid gases, a spray dryer or wet scrubber may be considered, depending on emissions of acid gases. Similarly, Cd and Pb are not controlled in an afterburner, and this suggests specifying a fabric filter. Numerical emission standards for all section 129 pollutants are required.

**STATUS OF DATA COLLECTION AND ANALYSIS:** Based on SURVEYV2.MDB, there appear to be no HAPs emission test data available for drum reclaimer incinerators. Subteam #4 is currently working with trade group representatives to further refine combustor description, population estimates, and obtain existing emissions data on the other section 129 pollutants.

**ISSUES AND NEEDS:** Subteam #4 wishes to express a concern on the paucity of emissions data for certain section 129 pollutants.

**OTHER COMMENTS:** Note that these data may be questionable. For example, benzene emissions of 0.04 pounds per year seem unlikely and may be a typographical error in the database. It has been suggested that, at least for HAPs, that these “data” are really emission factors with unknown units. This is consistent with the ICR respondents indicating no HAPs emission data.

EMISSIONS DATA from ICCRV2.MDB

Pollutant, CAS	Average emission rate	Data points
PM	2.1 tons per year	6
PM <sub>10</sub>	0.9 tons per year	4
CO	0.4 tons per year	7
VOC	0.27 tons per year	6
SO <sub>2</sub>	0.11 tons per year	7
NO <sub>x</sub>	1.2 tons per year	6
Benzene, 71-43-2	0.04 pounds per year	3
Arsenic, 7440-38-2	0.004 pounds per hour	1
Cadmium, 7440-43-9	0.001 pounds per hour	1
Copper, 7440-50-8	0.0006 pounds per hour	1
Lead, 7439-92-1	0.003 pounds per hour	1
Manganese, 7439-96-5	0.0005 pounds per hour	1
Mercury, 7439-97-6	0.005 pounds per hour	1
Nickel, 7440-02-0	0.004 pounds per hour	1

Selenium, 7782-49-2	0.00004 pounds per hour	1
Zinc, 7440-66-6	0.00015 pounds per hour	1

**SUBCATEGORY NAME:** Parts Reclaimers

**ASSIGNED CAA SECTION (ICWI OR OSWI):** Section 129 (ICWI)

**GROUPINGS WITHIN SUBCATEGORY:** None

**POPULATION STATISTICS:** ICCR Inventory database - 239 facilities, 299 units. Subteam #4 suspects the national population may be considerably larger. Review of SURVEYV2.MDB will refine this estimate.

**MATERIALS COMBUSTED:** This type of incinerator is used to reclaim metal parts for reuse in their current form. Coatings such as cured paint, plastisol, or varnish or unwanted parts such as plastic spacers or rubber grommets are burned off a wide variety of metal parts in these units. Plastisol coatings are comprised of polyvinyl chloride and phthalate plasticizer. Plastisol and paint both may contain heavy metal pigments. Metal parts fed to these primarily batch units include paint hooks/racks, electric motor armatures, transformer winding cores, and electroplating racks.

**COMBUSTION DEVICE:** Parts reclaimer incinerators are typically small, batch, fossil fuel-fired units. The parts reclaimer incinerators listed in the ICCR Inventory database list a range of heat inputs from 0.2 MMBtu/hr to 3.7 MMBtu/hr. They are often called burnoff or bakeoff ovens and often not recognized as “incinerators.” Operations consist of loading the cold burnoff oven with metal parts, igniting the afterburner, if present, and main burner (both usually natural gas-fired), and allowing the coating to pyrolyze into an fragile ash-like material (often over a period of hours) which may be then mechanically removed or abrasive-blasted off the metal part. Because of the wide variety of parts recycled in these units, facility size varies widely, from small electric motor repair shops to large automobile assembly plants.

**BASIS FOR SUBCATEGORY BOUNDS:**

These units are subcategorized on the basis of similar purpose - recovering a metal part for reuse in its current form. This places them in Section 129 rather than in Section 112 with the scrap metal recovery units. They are kept separate from drum reclaimers, because they tend to be smaller batch units and do not have the potential for burning RCRA hazardous wastes. However, subteam #4 expects that at least some section 129 pollutants are emitted from units in this subcategory.

**POLLUTANTS CONSIDERED FOR REGULATION:** Subteam #4 believes that there is a potential for emissions of all section 129 pollutants from parts reclaimer incinerators. Review of SURVEYV2.MDB suggests the existence of HAPs emissions data for at least two parts reclaimers (ICCR Facility IDs - 060670026 and 550570416). Subteam #4 possesses a data summary of an old stack test of a rack burnoff oven that indicates the presence of HCl and organic compounds in stack emissions. In addition, any metals present in coating pigments also have the potential to be emitted.

**FLOOR LEVEL OF CONTROL:** Based on review of ICCRV2.MDB, at least 25% of parts reclaimer incinerators are equipped with afterburners. This is consistent with the floor for drum reclaimer incinerators. Good combustion practices are also important: afterburner preheat and the removal of excess combustible materials such as paper, rope, cloth, and visibly loose coatings/parts should be specified. Numerical emission standards for all section 129 pollutants are required.

**REGULATORY ALTERNATIVES ABOVE FLOOR:** The ICCR Inventory database lists a number of units controlled by wet scrubbers and fabric filters. The floor level of control (afterburner) does not control metals or acid gases, and control alternatives above the floor should examine scrubbers, spray dryers, and fabric filters. Numerical emission standards for all section 129 pollutants are required.

**STATUS OF DATA COLLECTION AND ANALYSIS:** Based on Subteam #4 review of SURVEYV2.MDB, there appear to be at least two parts reclaimer incinerators with HAPs emission data. Identification of these facilities will be provided to ERG in order to obtain the test reports. Subteam #4 also intends to request dioxin testing of a plastisol-coated rack burnoff oven.

**ISSUES AND NEEDS:** Subteam #4 requests dioxin testing of a plastisol-coated rack burnoff oven. Further investigation of inline or continuous units may warrant an additional grouping.

**OTHER COMMENTS:** These “data” are suspect and may really be emission factors, as in the case of drum reclaimers. Actual emission test reports are being sought.

EMISSIONS DATA from ICCRV2.MDB

Pollutant, CAS	Average emission rate, range	Data points
PM	0.19 tons per year, 0.001 - 4.28	30
PM <sub>10</sub>	0.008 tons per year, 0.0008 - 0.034	22
CO	0.048 tons per year, 0.0051 - 0.335	26
VOC	0.26 tons per year, 0.001 - 4.275	45
SO <sub>2</sub>	0.006 tons per year, 0.00015 - 0.042	40
NO <sub>x</sub>	0.34 tons per year, 0.001 - 4.0	47
Acrolein, 107-02-8	2.7E-09 pounds per hour	1
Toluene, 108-88-3	1.4E-04 pounds per hour	4
, 115-07-1	1.9E-03 pounds per hour	2
Formaldehyde, 50-00-0	3.0E-03 pounds per hour	5
Benzene, 71-43-2	1.9E-04 pounds per hour	5
Acetaldehyde, 75-07-0	7.3E-09 pounds per hour	1

Naphthalene, 91-20-3	1.1E-04 pounds per hour	3
, 18540-29-9	4.1E-05 pounds per hour	2
, 193-39-5	9.2E-07 pounds per hour	2
, 205-99-2	4.9E-07 pounds per hour	2
, 207-08-9	5.5E-07 pounds per hour	2
Chrysene, 218-01-9	5.8E-07 pounds per hour	2
Benzo[a]pyrene, 50-32-8	7.0E-07 pounds per hour	2
, 53-70-3	1.0E-06 pounds per hour	2
1,2-Benzanthracene, 56-55-3	6.4E-07 pounds per hour	2
Lead, 7439-92-1	3.0E-04 pounds per hour	2
Nickel, 7440-02-0	8.7E-05 pounds per hour	2
Arsenic, 7440-38-2	5.0E-04 pounds per hour	2
Beryllium, 7440-41-7	4.2E-06 pounds per hour	2
Cadmium, 7440-43-9	1.4E-03 pounds per hour	2
Hydrogen chloride, 7647-01-0	0.044 pounds per hour	2

**SUBCATEGORY NAME:** Unclassified Metals-Related Incinerators

**ASSIGNED CAA SECTION (ICWI OR OSWI):** Sections 129 or 112

**GROUPINGS WITHIN SUBCATEGORY:** Not applicable

**POPULATION STATISTICS:** ICCR Inventory database - 266 facilities, 315 units. These numbers will be reduced based on review of SURVEYV2.MDB.

The largest subcategory under Subteam #4 is currently subcategory 4, which includes all metals-related incinerators that could not be definitely assigned to any of the other 3 subcategories (i.e., drum reclaimers, parts reclaimers, or scrap metal recovery units). It is expected that the third version of the ICR/Survey database will provide additional information to allow distribution of many unclassified units into the other subcategories, as appropriate. Nevertheless, a need to analyze true “unclassified” metals-related incineration units will remain. A detailed analysis of survey responses (SURVEYV2.MDB) is being conducted to sort the unclassified Subteam #4 units into drum reclaimers, parts reclaimers, and scrap metal recovery units, as appropriate.